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Agriculture

Forest  
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Lyman Clayton  
Phoenix Area Director  
Bureau of Indian Affairs  
P. O. Box 10  
Phoenix, AZ 85001

Dear Mr. Clayton:

On November 24, 2003, Bobbe Fitzgibbon, Entomologist with the Forestry and Forest Health Arizona Zone Office, met with the San Carlos Forestry Staff in San Carlos, AZ, for a tour of their forest and evaluation of some of the issues of interest to the land managers. The trip consisted of two days of field visits to various situations and pest conditions.

In the Point of Pines area, several sites were visited. The first stop was at recreation areas near Point of Pines Lake, where ponderosa pine mortality was evident in the picnic area. Much of the mortality had occurred early in the season; however, several trees were found with signs of current infestation in the upper bole. This type of mortality is consistent with what we have been seeing with infestations by *Ips spp.*, throughout the state. When checking the lower bole of previously infested trees, we found evidence of bark beetle galleries from both the engraver beetle, *Ips* species and western pine beetle, *Dendroctonus brevicomis*. These were quite difficult to identify, since borer activity was extensive and appeared to have followed shortly after the infestation of the tree by the bark beetles.

It is possible that some bark beetle population reduction is taking place due to the voracious feeding of the borers. Borers will consume bark beetle larvae in their path, in addition to removing enough host material that the remaining bark beetle larvae will starve (Furniss and Carolin, 1977). At the campground, we discussed the possibility of spraying some of the high value trees to prevent infestation by bark beetles. It is possible that some of the remaining funding from the 2003 Prescott scale project could be used to accomplish this treatment. While the Prescott scale infestation was still evident, it has been overshadowed by the bark beetle outbreak.

We also toured an area of juniper mortality. We found some evidence in the trees of infestation by *Ploeosinus cristatus*, the cypress bark beetle (see Figure 1). However, there were few galleries found; and the trees may have succumbed to other factors, presumably drought, with the beetles entering the weakened trees prior to death.





**Figure 1. *Ploeosinus cristatus***

While touring the Reservation, we went to sites of mechanical thinning of juniper stands. The purpose of the thinning, in addition to stand improvement, was to help to carry fire through this normally fire-resistant type. Since the cypress bark beetle is known to infest felled material, including branches, it is important to be sure that the slash is burned promptly. There is evidence of multiple generations of this beetle in one year; beetles could infest the slash and rapidly move to uninfested green trees.

A stand near Point of Pines was thinned to reduce the basal area as a bark beetle preventive measure. It included a small wildlife exclusion where thinning did not take place. While there was some bark beetle mortality in smaller diameter trees in the thinned portion of the stand, many large trees had been killed by bark beetles in the wildlife exclusion.

A thinning project in the Maggie Jones Plantation to suppress an infestation of Nantucket pine tip moth, *Rhyacionia frustrana*, (see Figure 2) by increasing vigor in residual trees was funded and completed in 2000. A post-treatment evaluation done in 2002 indicated that the majority of the residual trees had grown beyond 15 feet. Trees between 10 and 25 feet become resistant to infestation by tip moth. A few of the trees were found to be infested with Ips bark beetles at that time.



**Figure 2. Nantucket Pine Tip Moth**

A follow-up visit was made to this plantation (see Figure 3). Most of the residual trees had almost reached a height of 25 feet; there was little indication of infestation on these trees. However, one tree that had attained only 4 feet in height had multiple mined tips. There was no evidence of bark beetle damage in the area we surveyed, but several trees had indications of sawfly activity. The sawfly damage was insignificant.



**Figure 3. Maggie Jones Plantation**

Along Route 4, many pockets of tree mortality were located in the stream corridor of Turkey Creek. Again, the trees exhibited a variety of conditions: some had dead infested tops with no sign of beetle activity below; some trees were dead with visible western pine beetle galleries in the lower bole; some of the dead trees had woodborer activity that had obliterated any signs of bark beetle galleries. However, the area is an ecotone, a transition zone where the ponderosa pines have expanded down the watercourse into a less favorable habitat. As the drought has continued, these trees, used to an abundance of moisture, may have become stressed as the water table receded. *Ips spp.* are particularly well adapted to take advantage of drought stressed trees. In this area, there was also considerable juniper mortality.

In the Hilltop area, there was scattered bark beetle mortality in the ponderosa pine. In some stands, top mortality was evident; but no evidence of bark beetle activity was visible from ground level. In trees which were obviously killed by bark beetle attack, borer activity again often obliterated the galleries of the bark beetles. In the sale units, there was no bark beetle activity in the residual trees. However, large diameter slash was infested, even though cutting had been fairly recent, indicating a late-season beetle flight. The slash was in a sunny location, which would facilitate drying and some bark beetle brood mortality. The Forestry Staff indicated that the slash was scheduled to be treated in the early spring. We recommend that this be accomplished prior to first beetle flight, probably in mid to late March. There was evidence of *Cryptoporus vulvatus* activity in one stand, damage in dead trees and conks on living trees. One broken tree with very green needles was rotted at the point at which it had broken. It is likely that *Dycomitis squallins* had entered the tree through a wound.

Gypsy Moth trapping will begin on the Reservation in 2004, with two traps each in two recreation areas.

If you require further information or have any questions, please contact Bobbe Fitzgibbon at 928-556-2072 or [bfitzgibbon@fs.fed.us](mailto:bfitzgibbon@fs.fed.us).

Sincerely,

/s/ John Anhold  
JOHN ANHOLD  
Arizona Zone Leader  
Forest Health

cc: Leonard Lucero, Bobbe Fitzgibbon, Debra Allen-Reid, Craig Wilcox, Dee Randel, Victoria Wesley